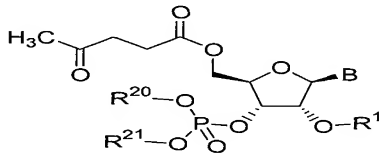
AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Currently Amended): A ribonucleic acid compound represented by ~~the following~~ general formula (1):

~~[Chemical Formula 19]~~



(1)

(wherein B represents adenine, guanine, cytosine or uracil or a modified form thereof; R^1 represents a protecting group which can be removed at 90% or more at a temperature in the range from 0°C to 60°C under acidic conditions at a pH value from 2 to 4 within 24 hours; R^{20} represents H or an alkyl which may be substituted; and R^{21} represents an aryl which may be substituted or a monocyclic or bicyclic heterocyclic which may be substituted), or a salt thereof.

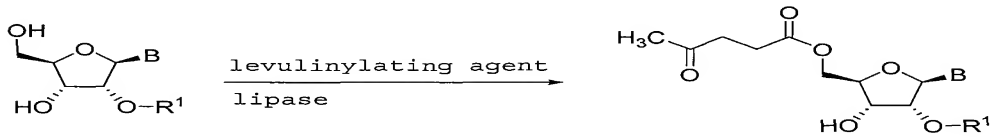
Claim 2 (Original): The ribonucleic acid compound or a salt thereof according to claim 1, wherein R^1 is 2-tetrahydrofuranyl or 1,3-dioxolan-2-yl.

Claim 3 (Original): The ribonucleic acid compound or a salt thereof according to claim 1 or 2, wherein R^{20} is H, 2-cyanoethyl or 2,2,2-trichloroethyl, and R^{21} is 2-chlorophenyl or 2-chloro-4-tert-butylphenyl.

Claim 4 (Currently Amended): A method for producing a ribonucleic acid compound represented by the following general formula (3), comprising regioselectively levulinylating the hydroxyl at the 5'-position of a ribonucleic acid compound represented by general formula (2) by allowing a

levulinylating agent and a lipase to act on ~~a ribonucleic acid~~ the compound represented by ~~the following~~ general formula (2):

~~[Chemical Formula 20]~~

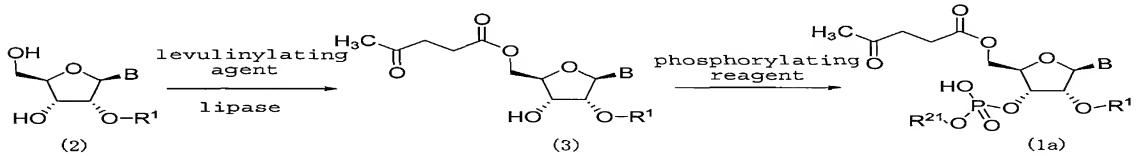


(2) (3)

~~(~~wherein B represents adenine, guanine, cytosine or uracil or a modified form thereof; and R^1 represents a protecting group which can be removed at 90% or more at a temperature in the range from 0°C to 60°C under acidic conditions at a pH value from 2 to 4 within 24 hours~~)~~.

Claim 5 (Currently Amended): A method for producing a ribonucleic acid compound ~~(1) in which R^{20} is H~~ represented by ~~the following~~ general formula (1a), ~~by~~ comprising allowing a phosphorylating reagent to act on a ribonucleic acid compound represented by ~~the following~~ general formula (3) produced by a production method including the step of regioselectively levulinylating the hydroxyl at the 5'-position of a ribonucleic acid compound represented by formula (2) by allowing a levulinylating agent and a lipase to act on ~~a~~ the ~~ribonucleic acid~~ compound represented by ~~the following~~ general formula (2):

~~[Chemical Formula 21]~~

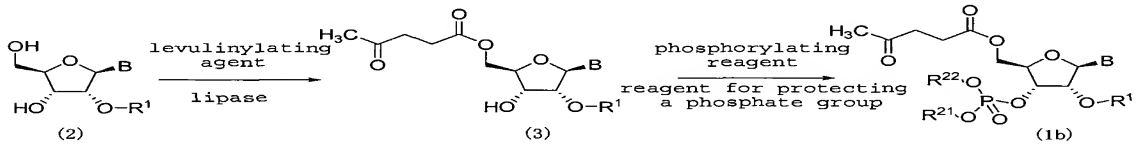


(2) (3) (1a)

~~(~~wherein B represents adenine, guanine, cytosine or uracil or a modified form thereof; R^1 represents a protecting group which can be removed at 90% or more at a temperature in the range from 0°C to 60°C under acidic conditions at a pH value from 2 to 4 within 24 hours; and R^{21} represents an aryl which may be substituted or a monocyclic or bicyclic heterocyclic which may be substituted~~)~~.

Claim 6 (Currently Amended): A method for producing a ribonucleic acid compound ~~(1) in which R^{20} is an alkyl which may be substituted~~ represented by ~~the following~~ general formula (1b), ~~by~~ comprising allowing a phosphorylating reagent and a reagent for protecting a phosphate group to act on a ribonucleic acid compound represented by ~~the following~~ general formula (3) produced by a production method including the step of regioselectively levulinylating the hydroxyl at the 5'-position of a ribonucleic acid compound represented by general formula (2) by allowing a levulinylating agent and a lipase to act on ~~a ribonucleic acid~~ the compound represented by ~~the following~~ general formula (2):

~~[Chemical Formula 22]~~



~~(~~wherein B represents adenine, guanine, cytosine or uracil or a modified form thereof; R^1 represents a protecting group which can be removed at 90% or more at a temperature in the range from 0°C to 60°C under acidic conditions at a pH value from 2 to 4 within 24 hours; R^{21} represents an aryl which may be substituted or a monocyclic or bicyclic heterocyclic which may be substituted; and R^{22} represents an alkyl which may be substituted~~)~~.

Claim 7 (Original): The method for producing a ribonucleic acid compound according to any one of claims 4 to 6, wherein R^1 is 2-tetrahydrofuranyl or 1,3-dioxolan-2-yl.

Claim 8 (Original): The method for producing a ribonucleic acid compound according to any one of claims 4 to 7, wherein the levulinylating agent is levulinic acid, levulinic anhydride, a levulinate ester or a halide levulinate.

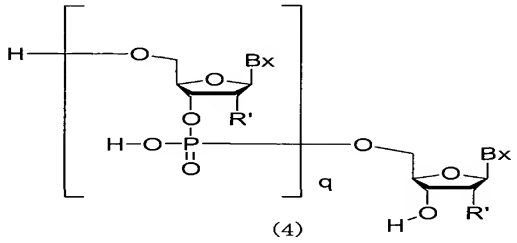
Claim 9 (Original): The method for producing a ribonucleic acid compound according to any one of claims 5 to 8, wherein the phosphorylating reagent is 2-chlorophenyl phosphoroditriazolide, 2-

chlorophenyl-O,O-bis(1-benzotriazolyl)phosphate or 2-chloro-4-tert-butylphenyl phosphoroditriazolide.

Claim 10 (Original): The method for producing a ribonucleic acid compound according to any one of claims 6 to 9, wherein the reagent for protecting a phosphate group is 3-hydroxypropionitril or 2,2,2-trichloroethanol.

Claim 11 (Currently Amended): A liquid-phase synthesis method for an oligonucleotide compound represented by ~~the following~~ general formula (4):

~~[Chemical Formula 23]~~

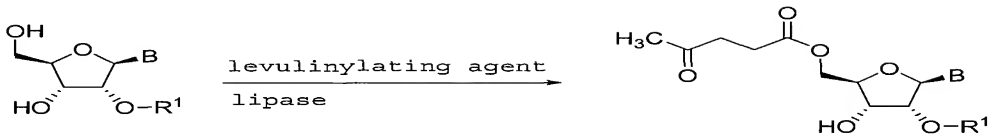


(4)

~~(~~wherein each Bx independently represents adenine, guanine, cytosine, uracil or thymine or a modified form thereof; q represents an integer in the range from 1 to 100; at least one of R' is hydroxyl and the others represent independently H or hydroxyl~~)~~, comprising the following steps (a) to (f):

(a) producing a ribonucleic acid compound represented by ~~the following~~ general formula (3) by regioselectively levulinylating the hydroxyl at the 5'-position of a ribonucleic acid compound represented by general formula (2) by allowing a levulinylating agent and a lipase to act on ~~a ribonucleic acid~~ the compound represented by ~~the following~~ general formula (2):

~~[Chemical Formula 24]~~

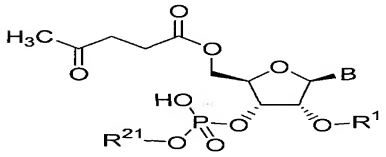


(2) (3)

(wherein B represents adenine, guanine, cytosine or uracil or a modified form thereof; and R^1 represents a protecting group which can be removed at 90% or more at a temperature in the range from 0°C to 60°C under acidic conditions at a pH value from 2 to 4 within 24 hours);

(b) producing a ribonucleic acid compound represented by ~~the following~~ general formula (1a) by phosphorylating the hydroxyl at the 3'-position of the compound represented by general formula (3) by allowing a phosphorylating reagent to act on ~~a ribonucleic acid~~ the compound represented by general formula (3) produced by ~~the~~ step (a):

~~[Chemical Formula 25]~~

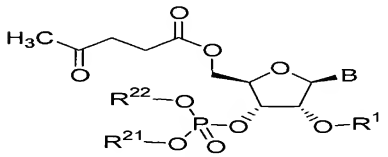


(1a)

(wherein B and R^1 are ~~the same~~ as defined above; and R^{21} represents aryl which may be substituted or a monocyclic or bicyclic heterocyclic group which may be substituted);

(c) producing, separately from ~~the~~ step (b), a ribonucleic acid compound represented by ~~the following~~ general formula (1b) by allowing a phosphorylating reagent and a reagent for protecting a phosphate group to act on ~~a ribonucleic acid~~ the compound represented by general formula (3) produced by ~~the~~ step (a):

~~[Chemical Formula 26]~~

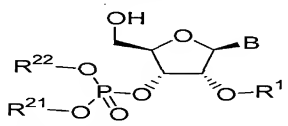


(1b)

(wherein B, R^1, and R^{21} are ~~the same~~ as defined above; and R^{22} represents alkyl which may be substituted);

(d) producing a ribonucleic acid compound represented by ~~the following~~ general formula (5) by deprotecting levulinyl of the ~~ribonucleic acid~~ compound represented by general formula (1b) produced by ~~the~~ step (c):

~~[Chemical Formula 27]~~

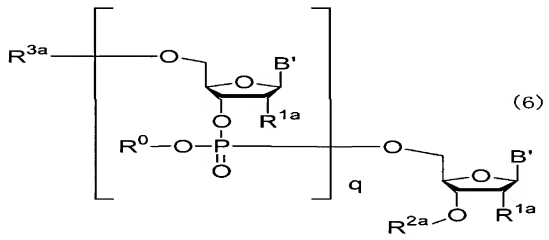


(5)

(wherein B, R^1, R^{21} and R^{22} are ~~the same~~ as defined above);

(e) producing an oligonucleotide compound represented by ~~the following~~ general formula (6) by stepwise oligomerization using as a monomer component, at least one of the ribonucleic acid compounds represented by general formulas (1a) and (5) produced by ~~the~~ steps (b) and (d), respectively:

~~[Chemical Formula 28]~~

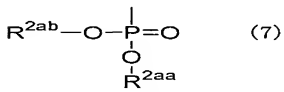


(6)

(wherein each B' independently represents adenine, guanine, cytosine, uracil or thymine or a modified form thereof; each R^0 independently represents H, aryl which may be substituted or a

monocyclic or bicyclic heterocyclic group which may be substituted; R^{3a} represents H, levulinyl or 4,4'-dimethoxytrityl; q is ~~the same~~ as defined above; at least one of R^{1a} is hydroxyl substituted with a protecting group which can be removed at 90% or more at a temperature in the range from 0°C to 60°C under acidic conditions at a pH value from 2 to 4 within 24 hours, and the others independently represent H or hydroxyl substituted with a protecting group which can be removed at 90% or more at a temperature in the range from 0°C to 60°C under acidic conditions at a pH value from 2 to 4 within 24 hours; and R^{2a} represents acyl or a phosphate group represented by ~~the following~~ general formula (7):

~~[Chemical Formula 29]~~



(7)

~~(~~wherein R^{2aa} represents aryl which may be substituted or a monocyclic or bicyclic heterocyclic group which may be substituted; and R^{2ab} represents H or alkyl which may be substituted~~)~~; and

(f) deprotecting all the protecting groups of the oligonucleotide compound represented by general formula (6) produced by ~~the~~ step (e).

Claim 12 (Original): The liquid-phase synthesis method for an oligonucleotide compound according to claim 11, wherein R^1 is 2-tetrahydrofuranyl or 1,3-dioxolan-2-yl.

Claim 13 (Original): The liquid-phase synthesis method for an oligonucleotide compound according to claim 11 or 12, wherein q is an integer in the range from 1 to 100.

Claim 14 (Original): The liquid-phase synthesis method for an oligonucleotide compound according to any one of claims 11 to 13, wherein q is an integer in the range from 10 to 50.

Claim 15 (Original): The liquid-phase synthesis method for an oligonucleotide compound according to any one of claims 11 to 14, wherein the levulinylating agent is levulinic acid, levulinic anhydride, a levulinate ester or a halide levulinate.

Claim 16 (Original): The liquid-phase synthesis method for an oligonucleotide compound according to any one of claims 11 to 15, wherein the phosphorylating reagent is 2-chlorophenyl phosphoroditriazolide, 2-chlorophenyl-O,O-bis(1-benzotriazolyl)phosphate or 2-chloro-4-tert-butylphenyl phosphoroditriazolide.

Claim 17 (Original): The liquid-phase synthesis method for an oligonucleotide compound according to any one of claims 11 to 16, wherein the reagent for protecting a phosphate group is 3-hydroxypropionitril or 2,2,2-trichloroethanol.